



# Current fluctuations for stochastic particle systems with drift in one spatial dimension

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**Abstract.** This review article discusses limit distributions and variance bounds for particle current in several dynamical stochastic systems of particles on the one-dimensional integer lattice: independent particles, independent particles in a random environment, the random average process, the asymmetric simple exclusion process, and a class of totally asymmetric zero range processes. The first three models possess linear macroscopic flux functions and lie in the Edwards-Wilkinson universality class with scaling exponent  $1/4$  for current fluctuations. For these we prove Gaussian limits for the current process. The latter two systems belong to the Kardar-Parisi-Zhang class. For these we prove the scaling exponent  $1/3$  in the form of upper and lower variance bounds.